Having thus described the preferred embodiments, the invention is now claimed to be:

1.   A method of releasing resources of a user session operating in a software
environment that includes an automatic memory management algorithm, the method
comprising:

detecting an impending execution of the automatic memory management
algorithm;

responsive to the detecting, accessing an object of the user session;

identifying one or more external resource references of said object;

releasing said one or more external resource references; and

repeating the accessing, identifying, and releasing for each object of the user
session.

2.   The method as set forth in claim 1, further including:

performing the accessing, identifying, releasing, and repeating as a Listener
method belonging to a Java MyListener class in a Java environment; and

registering the Listener method with the user session.

3.   The method as set forth in claim 2, wherein the registering includes:

setting a session attribute to correspond to an instance of the Listener method.

4.   The method as set forth in claim 2, wherein the detecting includes:

notifying the registered Listener method of the impending expiration of the user

3   session.

1   **5.**   The method as set forth in claim **1**, wherein the detecting includes:

2   detecting an impending expiration of the user session.

1   **6.**   The method as set forth in claim **1**, wherein the accessing, identifying,

2   releasing, and repeating is performed prior to the execution of the automatic memory

3   management algorithm.

1   **7.**   The method as set forth in claim **1**, wherein:

2   the identifying includes identifying a file resource; and

3   the releasing includes closing said file resource.

1   **8.**   The method as set forth in claim **1**, wherein:

2   the identifying includes identifying an allocated resource; and

3   the releasing includes deallocating the allocated resource.

1   **9.**   The method as set forth in claim **1**, wherein the accessing of an object of

2   the user session includes:

3   obtaining an object identifier corresponding to said object from an object graph;

4   and

5   retrieving said object using the object identifier.

1   **10.**   An article of manufacture comprising a program storage medium readable

2   by a computer and embodying one or more instructions executable by the computer to

3   perform a method for preparing a user session for expiration, the method including:

4   detecting an impending expiration of the user session;

5   traversing an object graph corresponding to the user session to locate user session

6   objects;

7   for each object located in the traversing, identifying allocated resources of the

8   object; and

9   for each identified allocated resource, deallocating said allocated resource.

1   **11.**   The article of manufacture as set forth in claim **10**, wherein the identifying

2   includes:

3   identifying resources selected from a group consisting of file handles, database

4   connections, sockets, and threads.

1   **12.**   The article of manufacture as set forth in claim **10**, wherein the traversing,

2   locating, identifying, and deallocating is completed prior to execution of a garbage

3   collection algorithm performed preparatory to expiration of the user session.

1   **13.**   The article of manufacture as set forth in claim **10**, wherein the one or

2   more instructions are encoded as one of:

3   Java bytecodes,

4   C# intermediate language (IL) code,

5   A compiled Java program, and

6   a compiled C# program.

1   **14.**   The article of manufacture as set forth in claim **10,** wherein the traversing

2   of the object graph includes:

3   obtaining an enumeration of user session objects; and

4   looping through the enumeration of user session objects.

1   **15.**   A system comprising:

2   a software program configured to initiate, process, and terminate user sessions;

3   a resource deallocation module linked to the software program to deallocate

4   allocated external resources of each object of a user session responsive to an impending

5   termination of said user session; and

6   an automatic memory management module invoked subsequent to the

7   deallocation performed by the resource deallocation module.

1   **16.**   The system as set forth in claim **15,** further including:

2   a Java virtual machine implementing the software program, the resource

3   deallocation module, and the automatic memory management module.

1   **17.**   The system as set forth in claim **15,** wherein the resource deallocation

2   module includes:

3   a deallocation listener method adapted to deallocate the allocated external

4   resources of each object of said user session responsive to a notification of the impending

5   termination of said user session.

1   **18.**   The system as set forth in claim **17,** wherein the resource deallocation

2   module is linked to the software program by registration of the deallocation listener

3   method with said user session.

1   **19.**   The system as set forth in claim **17,** wherein the resource deallocation

2   module is linked to the software program by an assignment of an attribute of said user

3   session to the deallocation listener method.

1   **20.**   The system as set forth in claim **15,** further including:

2   an object graph defining an interrelationship between objects of said user session,

3   the resource deallocation module being adapted to access the object graph to identify the

4   objects of the user session.

1   **21.**   The system as set forth in claim **15,** wherein the automatic memory

2   management module is invoked by the software program to process a plurality of user

3   sessions including said user session.

1   **22.**   The system as set forth in claim **15,** wherein the automatic memory

2   management module is invoked by an operating system to process software including

3   said software program that operate under said operating system.

1   **23.**   The system as set forth in claim **15,** wherein the resource deallocation

2   module is integrated with the automatic memory management module as a single unitary

3   memory management unit that executes prior to the termination of said user session.